

WHAT IS CLAIMED IS:

1. A method of forming an insulating film comprising silicon oxide formed over a glass substrate,
wherein the insulating film includes halogen at a concentration of
5 $5 \times 10^{20} \text{ cm}^{-3}$ or less and carbon at a concentration of $5 \times 10^{19} \text{ cm}^{-3}$ or less which are detected by second ion mass spectroscopy.

Sub. B1
2. A method according to claim 1, wherein the halogen is fluorine or chlorine.

3. A method according to claim 1, wherein the insulating film includes
10 carbon at a concentration of $1 \times 10^{18} \text{ cm}^{-3}$ or less which is detected by the second ion mass spectroscopy.

4. A method according to claim 1, wherein said insulating film is a gate insulating film.

5. A method according to claim 1 wherein the insulating film is an
15 insulating film in a thin film transistor.

6. A method according to claim 1, wherein the insulating film covers an even surface over the glass substrate.

7. A method according to claim 1, wherein the insulating film includes halogen at a concentration of $1 \times 10^{17} \text{ cm}^{-3}$ or more.

20 8. A method of producing a semiconductor device, said method comprising the steps of:

forming a crystalline semiconductor island formed over a glass substrate; and

forming an insulating film including silicon oxide formed to cover the crystalline semiconductor island,

5 wherein the insulating film includes halogen at a concentration of $5 \times 10^{20} \text{ cm}^{-3}$ or less and carbon at a concentration of $5 \times 10^{19} \text{ cm}^{-3}$ or less.

9. A method according to claim 8, wherein the concentrations of halogen and carbon are detected by secondary ion mass spectroscopy.

10. A method according to claim 8, wherein the halogen is fluorine or chlorine.

11. A method according to claim 8, wherein the insulating film is formed by plasma chemical vapor deposition using an organic silane.

12. A method according to claim 8, wherein the insulating film includes halogen at a concentration of $1 \times 10^{17} \text{ cm}^{-3}$ or more.

13. A method of fabricating a thin film transistor, said method comprising the steps of

forming a crystalline semiconductor island formed over a glass substrate;

forming a silicon oxide film formed to cover the crystalline semiconductor island; and

forming a conductive film including at least one of aluminum, titanium, and titanium nitride, said conductive film being formed on the silicon oxide film,

wherein the silicon oxide film includes halogen at a concentration of $5 \times 10^{20} \text{ cm}^{-3}$ or less and carbon at a concentration of $5 \times 10^{19} \text{ cm}^{-3}$ or less.

b2 10. (Amended) A method according to claim 8, wherein the halogen is [fluorine or] chlorine.

b3 13. (Amended) A method of fabricating a thin film transistor, said method comprising the steps of:

forming a crystalline semiconductor island formed over a glass substrate:

forming a silicon oxide film formed [to cover] over the crystalline semiconductor island;

and

forming a conductive film including at least one aluminum, titanium, and titanium nitride, said conductive film being formed on the silicon oxide film,

wherein the silicon oxide film includes halogen at a concentration of $5 \times 10^{20} \text{ cm}^{-3}$ or less and carbon at a concentration of $5 \times 10^{19} \text{ cm}^{-3}$ or less.

14. (Amended) A method according to claim 13, wherein the halogen is [fluorine or] chlorine.

b4 18. (Amended) A method according to claim 17, wherein the halogen is [fluorine or] chlorine.

Please add new claims 21 through 29 as follows:

b5 --21. A method according to claim 1, wherein the halogen is fluorine.

22. A method according to claim 8, wherein the halogen is fluorine.

23. A method according to claim 13, wherein the halogen is fluorine.

24. A method according to claim 17, wherein the halogen is fluorine.

25. A method of fabricating a thin film transistor, said method comprising the steps of:

forming at least a thin film transistor including a crystalline semiconductor island, a gate electrode adjacent to the crystalline semiconductor island with a gate insulating film interposed therebetween;

forming an interlayer insulating film comprising silicon oxide over the thin film transistor,

wherein the interlayer insulating film includes halogen at a concentration of $5 \times 10^{20} \text{ cm}^{-3}$ or less and carbon at a concentration of $5 \times 10^{19} \text{ cm}^{-3}$ or less.

26. A method according to claim 25, wherein the halogen is chlorine.

27. A method according to claim 25, wherein the halogen is fluorine.